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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,529	09/01/2006	Kazuyoshi Inoue	ITO-0002	2962

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MILLEN, WHITE, ZELANO & BRANIGAN, P.C.
2200 CLARENDON BLVD.
SUITE 1400
ARLINGTON, VA 22201

EXAMINER	
PAK, SUNG H	

ART UNIT	PAPER NUMBER
2874	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/591,529	INOUE ET AL.	
	Examiner	Art Unit	
	SUNG H. PAK	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 November 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,4,6-10,12-14 and 16-21* is/are rejected.

7)☒ Claim(s) *2,5,11 and 15* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicants' response filed 11/21/2008 has been entered. All pending claims have been carefully reconsidered in view of the amendment.

Response to Arguments

Applicant's arguments filed 11/21/2008 have been fully considered but they are not persuasive.

On page 1 of the applicants' reply, it is argued that Liu does not teach "transparent conductive layer" as claimed.

The examiner respectfully submits that Liu explicitly discloses an exemplary preparation of the inventive device that includes the explicit reference to "transparent conductor film" (column 8 line 49-67).

On page 2 of the applicants' reply, it is argued that mere list of possible material for the conductive layer disclosed in Liu does not render claimed limitations obvious.

The examiner respectfully submits that the claimed limitations of the present application merely recite, in part, "… transparent conductive layer… contains indium oxide as its major component and further *one or two or more* oxides selected from tungsten oxide, molybdenum oxide and niobium oxide..." (e.g. claim 1 of the present application- emphasis added).

As discussed in the previous office action, column 3 line lines 64- column 4 lines 5 of Liu discloses, in part, that the conductive layer may be "metal... metal oxide, alloy or a multilayer

composite derived from aforementioned metal and/or metal oxide..." (emphasis added). Liu further discloses some explicit examples of such metal oxide to be indium oxides (such as gallium indium oxide or fluorine doped indium oxide). Nevertheless oxide forms of any of the metals listed in Liu (tungsten, molybdenum) may also be part of the transparent layer of Liu. Therefore, Liu fully and explicitly discloses indium oxide, tungsten oxide, and molybdenum oxides.

Further, the examiner respectfully submits that the claim limitation of the present application merely require indium oxide to be a "major component" of the composite (e.g. again, claim 1). Merriam-Webster's Collegiate Dictionary, 10th edition defines the term "major" as *greater in number, quantity, or extent*. As such, in a composite consisting indium, tungsten, and molybdenum oxides, indium oxide need only be 34% of the whole (assuming that tungsten and molybdenum consists 33% of the whole, respectively). This percentage could be even lower if more metal oxides were part of the entire conductive layer composite. In other words, the percent composition of indium oxide merely slightly higher than the percent compositions of other metal oxides in order for it to be considered a "major component", as claimed.

Therefore, one of ordinary skill in the art, looking at the display panel device of Liu and its disclosure relating to the transparent conductive layer would readily recognize that the claimed limitations of the present application are fully within the scope of Liu.

On page 3 of the applicants' reply, it is argued multiple components disclosed in Tsuda cannot render a "single" element of the present application obvious, as discussed in the previous office action.

The examiner respectfully submits that the applicants fail to recognize that there is nothing in the claim language that prohibits the "transparent conductive layer" to be made up of more than one subset portion or component. The examiner respectfully submits that while different subset portions or components of transparent conductive layer of Tsuda were designated with different reference numerals, they still form the "layer" as claimed, and render the claimed limitations obvious as discussed in the previous office action.

For the reasons stated above, the ground of rejection presented in the previous office action is maintained by the examiner.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 3-4, 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al. (US 7,304,780 B2- hereinafter "Liu") in view of Kim et al. (US 7,236,220 B2- hereinafter "Kim").

Liu discloses a display substrate comprising a transparent substrate (e.g. '21' or '20' in Fig. 2); a transparent conductive layer ('23' in Fig. 2) which is disposed on said transparent substrate and contains indium oxide as its major component and further one or two or more oxides selected from tungsten oxide, molybdenum oxide and niobium oxide (column 3 lines 64-column 4 lines 5);

further comprising a TFT element disposed on said transparent substrate ('20' in Fig. 2; column 1 lines 29-31).

However, Liu does not explicitly disclose the use of a metal reflecting layer as claimed in the present application. On the other hand, the use of reflecting layers in display substrate is common in the art, as taught by Kim. Kim teaches the use of a metal reflecting layer (column 9 lines 5-9); wherein said metal reflecting layer has a layer containing Al or Ag as its components (column 9 lines 5-9). The use of such reflecting layer would have been considered advantageous and desirable to one of ordinary skill in the art because it obviate the need for light emitting component and results in a display device with low power consumption. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of Liu to have a reflective layer as taught by Kim.

In addition, although Liu does not explicitly teach the method of producing such display substrate comprising a step of etching said conductive and reflective layers, etching steps in producing display devices are known in the art as taught by Kim (abstract). Such etching steps would be considered advantageous and desirable to one of ordinary skill in the art because it allows for precise and accurate formation of conductive and reflective layer, where the dimensions of such layers may be accurately controlled. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of Liu to use etching steps as taught by Kim.

Claims 10, 12-14, 16-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuda (US 6,600,470 B1) in view of Kim et al. (US 7,236,220 B2).

Tsuda discloses a display substrate comprising a transparent substrate ('30' Fig. 4); a transparent conductive layer which is disposed on said transparent substrate and contains indium oxide as its major component ('34' Fig. 4; column 15 lines 4-6) and further one or two or more oxides selected from lanthanoid-based metal oxides ('22' Fig. 4; column 14 lines 55-64).

However, Tsuda does not explicitly disclose the use of a metal reflecting layer as claimed in the present application. On the other hand, the use of reflecting layers in display substrate is common in the art, as taught by Kim. Kim teaches the use of a metal reflecting layer (column 9 lines 5-9); wherein said metal reflecting layer has a layer containing Al or Ag as its components (column 9 lines 5-9). The use of such reflecting layer would have been considered advantageous and desirable to one of ordinary skill in the art because it obviate the need for light emitting component and results in a display device with low power consumption. Therefore, it would

have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of Tsuda to have a reflective layer as taught by Kim.

In addition, although Tsuda does not explicitly teach the method of producing such display substrate comprising a step of etching said conductive and reflective layers, etching steps in producing display devices are known in the art as taught by Kim (abstract). Such etching steps would be considered advantageous and desirable to one of ordinary skill in the art because it allows for precise and accurate formation of conductive and reflective layer, where the dimensions of such layers may be accurately controlled. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of Liu to use etching steps as taught by Kim.

Allowable Subject Matter

Claims 2, 5, 11, 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: As discussed above, a display substrate comprising a conductive layer having indium oxide and one of tungsten, molybdenum, niobium oxide, or lanthanoid based metal oxide is known in the art.

However, none of the prior art fairly teaches or suggests such display substrate where in the composition ratio of: indium to all metal is between 0.8 to 0.99 as claimed in the present application.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SUNG H. PAK whose telephone number is (571)272-2353. The examiner can normally be reached on Monday- Friday, 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Uyen-Chau Le can be reached on (571)272-2397. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Sung H. Pak
Primary Examiner
Art Unit 2874

/Sung H. Pak/
Primary Examiner, Art Unit 2874